

SOME FOSSIL INSECTS FROM FLORISSANT, COLORADO.

By T. D. A. COCKERELL,

Of the University of Colorado, Boulder.

The new species described below are in the collection of the United States National Museum. The three Hymenoptera are sawflies, bringing the total of Florissant fossil sawflies up to 42. The new *Plecia* brings the list of Florissant Bibionidæ to six, and the *Dioctria* is the thirteenth fossil Asilid from that locality. None of the genera are new to Florissant.

HYMENOPTERA.

TENTHREDELLA OBLITA, new species.

Length, about 12 mm.; width of head, 3 mm.; length of anterior wing, about 11 mm.; head, thorax, and antennæ, black; abdomen, dark, with the sutures pallid; wings, slightly dusky; nervures, fuscous. Venation normal for the genus; interradiial vein strongly arched (much more so than in *T. saxorum*); second cubital cell long, receiving first recurrent vein near its middle; third cubital cell about twice as broad on apical side as on basal; lanceolate (anal) cell contracted, at the narrowest part a straight cross-nervure. In the hind wing the anal cell is broadly truncate, not at all petiolate, at the end.

The following measurements are in microns: First radial cell on third cubital, 832 (1136 in *T. saxorum*); second radial on third cubital, 336 (192 in *T. saxorum*); second cubital on first discoidal, 704 (560 in *T. saxorum*); second cubital on second (third, of authors,) discoidal, 736 (800 in *T. saxorum*); first discoidal on submedian, 336 (352 in *T. saxorum*); length of cross-vein of anal, about 160; width (depth) of anal at level of end of submedian cell, 480. The basal and first recurrent veins are parallel. Most nearly allied to *T. saxorum* Rohwer, but distinct by the quite different pattern of the abdomen and the details of the venation. Also allied to *T. avia* Brues, but the color-pattern is quite different, the veins are dark, and the anal cell is contracted at the cross-vein. *T. saxorum* has the apical part of the abdomen black, as in the living *Allantus uncinatus* Norton; while

the segments before the black are brown or ferruginous, each with a large black central spot, pointed posteriorly.

Miocene shales at Florissant (George Wilson.)

Holotype.—Cat. No. 63455, U.S.N.M.

PALEOTAXONUS VETUS, new species.

Length, 12 mm.; anterior wing, 9 mm.; width of abdomen, 3.25 mm.; head and thorax dark; legs apparently ferruginous; abdomen pallid, each segment with a median dusky patch and one at each side; wings perfectly clear, with ferruginous stigma and veins. Venation normal for the genus, with the characteristically formed first discoidal (which separates it at once from *Eriocampa*), the basal nervure meeting transversomedial, anal cell with oblique cross-vein, etc. The cubitellan cell is remarkably long.

The following measurements are in microns: Stigma beyond origin of interrarial vein, 160; first radial cell on third cubital, 832; first radial on second cubital, 1200; second radial on third cubital, 352; second cubital on first discoidal, 240; second cubital on second discoidal, 1200; lower side of second discoidal, 1728. Hind wing: Upper side of cubitellan cell, 1680; cubitellan on discoidellan, 720; discoidellan on submediellan, 400; discoidellan on brachiellan, 800. I hesitated to separate this from *P. trivittatus* Rohwer, but it seems to be a distinct species, being larger, with the interrarial vein placed as in *P. typicus* Brues. There is an intercostal vein. The very long cubitellan cell appears to be quite distinctive.

Miocene shales at Florissant (George Wilson). The specimen first studied lacked the ends of wings and abdomen, but these are present in the reverse, later noticed in the collection.

Holotype.—Cat. No. 63456, U.S.N.M.

ERIOCAMPOIDES MIMUS, new species.

Length, a little over 7 mm.; anterior wing, about 5.75 mm.; abdomen, 4.9 mm. long. Head black; thorax brown; the mesothorax pale; abdomen pallid, the apical 1.4 mm., dark fuscous; wings hyaline; stigma and nervures ferruginous; structure of wings nearly as in the living *E. aethiops*. Stigma truncate at end, hardly produced beyond origin of interradius, which is nearly vertical; interanal very oblique; anal cell contracted as usual. Measurements in microns: Third cubital cell on first radial, 448; first discoidal on median cell, 880; first discoidal on submedian, 368; first discoidal on first brachial, 592; lower side of first brachial, about 1280; submedian on second anal, 752; submediellan on brachiellan, 672. This looks like *E. micrarche* Cockerell, but the wing-measurements (*e. g.*, the long first brachial cell) are very different.

Miocene shales at Florissant (George Wilson).

Holotype.—Cat. No. 63457, U.S.N.M.

NEUROPTERA.

INOCELLIA TUMULATA Scudder.

A specimen collected at Florissant (Miocene shales) by Mr. George Wilson shows the ovipositor, which is about 6 mm. long. The anterior wings are 9.5 mm. long; the venation agrees in the main with Scudder's figure, but there are some differences, partly to be ascribed to variation and partly, I think, to error in Scudder's figure. The principal difference is that the cell in the first fork of the radial sector is relatively short, closed before the base of the cell in the fork of the upper branchlet.

HEMIPTERA.

METROBATES AETERNALIS Scudder.

A specimen from Florissant (George Wilson) shows the antennae, not described by Scudder. They are quite long and 175 μ thick near the base. The eyes are prominent.

DIPTERA.

PLECIA DECAPITATA, new species (Bibionidae).

Length about 10.5 mm.; thorax and legs dark; wings dusky but not very dark, the costal region not darker than the rest; abdomen 2.4 mm. wide, dark brown with narrow hyaline sutural bands, which are less than half as wide as the alternating dark ones. Separation of third vein from first about 3 mm. from base of wing and 5 from apex, the wings being 8 mm. long. The following measurements are in microns: Separation of third vein to anterior cross-vein about 1,600; depth of marginal cell at level of cross-vein, 480; origin of third vein to its fork (in a straight line), 2,560; end of first vein to end of second (upper branch of third), 720; end of first vein to end of lower branch of third, 2,240; depth of submarginal cell at level of end of second vein, 368.

Miocene shales of Florissant (George Wilson).

Holotype.—Cat. No. 63458, U.S.N.M.

This may be separated from the previously known species of *Plecia* from Florissant as follows:

- Small, wing 6 mm. long-----*melanderi* Cockerell.
 Larger, wing 8 mm. or over-----1.
 1. Wing long and narrow; marginal cell narrow, its greatest depth less than 400 μ -----*explanata* Cockerell.
 Wing, ordinary; marginal cell broader, its greatest depth over 450 μ -----2.
 2. Abdomen with the light bands wider than the dark; submarginal cell broader-----*axeliana* Cockerell.
 Abdomen with the dark bands much wider than the light; submarginal cell narrower-----*decapitata* Cockerell.

DIOCTRIA (?) PULVERIS, new species (Asilidae).

Length, 10.7 mm.; wings, 8 mm. long; hind femora, 2.5 mm., narrow basally, regularly enlarging to a stout apex; hind tibiae about 2.5 mm.; legs not bristly; head and thorax dark; abdomen long and slender, light reddish; thorax little elevated in profile; antennae poorly preserved, but third joint thick, much stouter than in modern *Dioctria*; wings, hyaline with light brown veins, no trace of a stigmatic spot. The venation is essentially as in *Dioctria*(?) *florissantina* Cockerell, and the insect appears to be certainly congeneric. The general appearance and the spineless legs suggest a Leptid, and the venation is close to that of the Leptid *Ptiolina*, though in other respects the insect is very different. Compared with *D. florissantina* the new species is larger, with a much broader (higher) second submarginal cell and paler veins, but the two are very similar. The base of the second posterior cell is not produced. The following wing measurements are in microns: End of first vein to end of second on margin, 1,280; end of first vein to vertical level of tip of wing, 2,048; depth of marginal cell at end of first vein, 320; depth of first submarginal cell at level of basal corner of second, 512; depth of second submarginal cell near end, 608; length of praefurca, 880; first submarginal on first basal, 832; first submarginal on first posterior, 2,400; second marginal on first posterior, about 2,080; first basal on discal, 736; first posterior on discal, 1,409; second posterior on discal, 176; third posterior on discal, about 336; second basal on discal, 336; second basal on fourth posterior, 176; second basal on fifth posterior, 384. The anal is closed not far from margin. Some of the corresponding measurements of *D. florissantina* are: First submarginal on first posterior, 1,632; first basal on discal, 672; first posterior on discal, 960.

Miocene shales of Florissant (George Wilson).

Holotype.—Cat. No. 63459, U.S.N.M.